

WHAT IS CLAIMED IS:

1. A light-emitting diode comprising:
 - a light-emitting element;
 - a lead assembly for supplying electric power to said light-emitting element;
 - a reflection mirror provided in an opposing relation to the light-emitting surface of said light-emitting element;
 - a light-transmissible material for sealing said light-emitting element, a part of the lead assembly and the reflection mirror; and
 - a radiation surface for radiating light reflected on said reflection mirror to the outside,
wherein said reflection mirror is a metal mirror which is obtained by processing a metal plate to give it a concave shape, or which is obtained by mirror-surface-treating the concave surface of said metal mirror; and said radiation surface is formed on the light-transmissible material at its surface at the rear of the light-emitting element.
2. A light-emitting diode as described in claim 1 wherein a through-hole is prepared at the center of said reflection mirror.
3. A light-emitting diode as described in claim 1 wherein the distance from the edge of said reflection mirror to the edge of the sealing mass made of said light-transmissible

material is less than 1.0 mm.

4. A light-emitting diode as described in claim 1 wherein the light-transmissible material is essentially shaped like a square when viewed from the side of the radiation surface, and the lead assembly is led to the outside from the base of the light-transmissible material close to a corner of the square.

5. A light-emitting diode comprising:

a light-emitting element;
a lead assembly for supplying electric power to said light-emitting element;
a reflection mirror provided in an opposing relation to the light-emitting surface of said light-emitting element; and

a radiation surface for radiating light reflected on said reflection mirror to the outside,

wherein said reflection mirror is a metal mirror which is obtained by combining a plurality of metal portions to give the assembly a concave shape, or which is obtained by mirror-surface-treating the concave surface of said metal mirror.

6. A light-emitting diode as described in claim 5 wherein said light-emitting element, part of said lead assembly and said reflection mirror are sealed with a light-transmissible material, and said radiation surface is formed on the light-transmissible material at its surface at the rear of the light-emitting element.

7. A light-emitting diode comprising:

- a light-emitting element;
- a lead assembly for supplying electric power to said light-emitting element;
- a reflection mirror provided in an opposing relation to the light-emitting surface of said light-emitting element;
- a radiation plate for radiating light reflected on said reflection mirror to the outside; and
- a case for containing said light-emitting element, a part of said lead assembly, and said reflection mirror,

wherein said reflection mirror is a metal mirror which is obtained by processing a metal plate to give it a concave shape, or which is obtained by mirror-surface-treating the concave surface of said metal mirror, and said radiation plate is attached to the case, the space enclosed by the radiation plate and the case being closed in an air-tight manner.

8. A light-emitting diode comprising:

- a light-emitting element;
- a lead assembly for supplying electric power to said light-emitting element;
- a reflection mirror provided in an opposing relation to the light-emitting surface of said light-emitting element;
- a light-transmissible material for sealing said light-emitting element, a part of the lead assembly and the

reflection mirror; and

a radiation surface for radiating light reflected on said reflection mirror to the outside,

wherein said reflection mirror is a mirror which is obtained by processing ceramic or a resin to give it a concave shape; and said radiation surface is formed on the light-transmissible material at its surface at the rear of the light-emitting element.

9. A light-emitting diode comprising:

a light-emitting element; and

a concave reflection mirror provided in an opposing relation to the light-emitting surface of said light-emitting element, light emitted by said light-emitting element being reflected on said reflection mirror, to be radiated to the outside,

wherein said reflection mirror is a metal mirror which is obtained by processing a metal plate to give it a concave shape, and said reflection mirror has a linear reflectance of 65% or higher.

10. A light-emitting diode as described in claim 9 wherein said reflection mirror is a metal mirror which is obtained by coining a metal plate to give it a mirror-surface, and then processing it to give it a concave shape.

11. A light-emitting diode as described in claim 9 wherein said metal mirror has received a mirror-surface-treat on its concave surface.

12. A light-emitting diode as described in claim 9 wherein

said reflection mirror is obtained by providing a metal plate which is obtained by removing portions surrounding a part to be made into the reflection mirror, thereby preparing open spaces around that part, coining the part to expand it without being exposed to any risk of distortions which might result if it had not been for the spaces, and processing the expanded part to turn it into a concave metal mirror, or is obtained by mirror-surface-treating the concave surface of said metal mirror.

13. A light-emitting diode as described in claim 9 comprising:

a lead assembly for supplying electric power to said light-emitting element;

a light-transmissible material for sealing said light-emitting element, a part of said lead assembly and said reflection mirror; and

a radiation surface for radiating light reflected on said reflection mirror to the outside,

wherein said radiation surface is formed on the light-transmissible material at its surface at the rear of the light-emitting element.

14. A light-emitting diode as described in claim 9 wherein said reflection mirror is obtained by preparing a mirror-surface-treated planar plate, and then processing it to give it a concave shape.

15. A light-emitting diode as described in claim 9 wherein the metal plate serving as a material of said reflection

mirror comprises copper, iron, or alloys mainly composed of those metals.

16. A light-emitting diode as described in claim 9 wherein the metal plate serving as a material of said reflection mirror comprises aluminum or alloys mainly composed of aluminum.

17. A light-emitting diode as described in claim 9 wherein the metal plate serving as a material of said reflection mirror comprises aluminum or alloys mainly composed of aluminum, and said reflection mirror receives alumite treatment on its concave mirror surface.

18. A light-emitting diode as described in claim 9 wherein said light emitting element emits light whose wavelength falls in the ultra-violet region.

19. A light-emitting diode as described in claim 9 wherein said reflection mirror has around its circumference a rim whose surface extends in a direction in parallel with a plane essentially perpendicular to the central axis of said reflection mirror.

20. A light-emitting diode as described in claim 12 wherein said lead assembly with said light-emitting diode mounted thereupon is disposed in contact with or close to said reflection mirror.

21. A light-emitting diode comprising:
a light-emitting element;
a lead assembly having a mount for mounting said light-emitting element; and

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a metal reflection mirror provided in an opposing relation to the light-emitting surface of said light-emitting element, light emitted by said light-emitting element being reflected on said reflection mirror, to be radiated to the outside,

wherein said mount has a recess whose mouth opens towards said reflection mirror with the center of the mouth being in alignment with the central axis of the reflection mirror, and the recess contains said light-emitting element, and a fluorescent material which converts the light emitted by said light-emitting element to light of a different wavelength.

22. A light-emitting diode comprising:

a light-emitting element;

a lead assembly for supplying electric power to said light-emitting element;

a reflection mirror provided in an opposing relation to the light-emitting surface of said light-emitting element;

a light-transmissible material for sealing said light-emitting element, a part of the lead assembly and the reflection mirror; and

a radiation surface for radiating light reflected on said reflection mirror to the outside,

wherein said reflection mirror is a metal mirror which is obtained by pressing a metal plate to give it a concave shape, or which is obtained by mirror-surface-treating the

concave surface of said metal mirror; and said radiation surface is formed on the light-transmissible material at its surface at the rear of the light-emitting element.